ANNALS OF SURGERY

VOL. XXXVIII SEPTEMBER, 1903 No. 3

ORIGINAL MEMOIRS.

OPERATIVE POSSIBILITIES IN CASES OF ADVANCED CARCINOMA OF THE BREAST.*

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THE history of adequate attempts to satisfy the indications presented by the pathology of carcinoma of the breast in operative procedures for its removal is brief and very recent; practically, it is included within the surgery of the past twenty-five years. Up to the beginning of this period, a feeling of hopelessness filled in general the surgical mind when confronted by cancer of the breast, since the ablest surgeons found themselves compelled to acknowledge the ultimate failure, in almost every instance, of their efforts to eradicate the disease by operation. In 1867, Charles H. Moore[1] had read a paper before the Royal Medical and Chirurgical Society of London on "The Influence of Inadequate Operations on the Theory of Cancer," in which he urged the importance of removing together with a diseased breast any texture adjoining the breast which is even approached by the disease, especially skin, lymphatics, fat, and pectoral muscle. This paper contained the germ of an advance in the surgery of the breast, the development of which became evident ten years later in the first paper published by Mr.

* A paper contributed to the Festschrift in honor of Professor Victor C. Vaughan, of the University of Michigan.

Mitchell Banks,[2] of Liverpool (1877), in which was definitely formulated the teaching that, whenever there was found an appreciable disease in the breast, the axillary lymph nodes were to be regarded as already involved in the disease, and that, whether enlarged glands could be detected by palpation or not, the fatty and glandular contents of the axilla should be systematically cleared out in all cases as a part of the operation for the removal of a cancerous breast.

Nearly simultaneous with this movement among English surgeons was a similar and even more general departure by their colleagues in Germany, marked especially by the writings of Volkmann[3] (1882) and of Küster[4] (1883), who to the systematic clearing out of the axilla added the practice of carefully dissecting from the surface of the pectoralis major muscle the fascia which covers it. In the United States, also, the younger Gross, particularly, by his papers and by his work on "Tumors of the Mammary Glands" (1880), was emphasizing the importance of a wider extirpation of possibly infected neighboring tissues and lymph glands.

A more important step was made in 1889, when Heidenhain[5] made a report to the German Surgical Congress, in which he demonstrated the pervasiveness of the carcinomatous process throughout the whole of a breast in which any part was affected, and the extension, as a rule, into the underlying fascia of any carcinomatous process in a breast, however limited it might seem to be. He further demonstrated the impossibility of removing this fascia without leaving behind disease-bearing fragments of it, however careful may have been the attempts to dissect it away from the subjacent muscle. Thus was explained the frequency of local recurrence, even after the most painstaking removal of this fascia.

The logical inference was that the pectoralis major muscle, as well as the fascia covering it, should be removed, together with the overlying breast and the axillary contents, in every case of carcinoma of the breast, in order to insure the highest possible certainty of complete removal of the disease in any given case.

In 1894 was made the first publication by Halsted [6] of the unusually favorable results which he had been able to secure at the Johns Hopkins Hospital by a careful and thorough carrying out in his work of the precautions suggested by his predecessors as already named; adding, as the special feature of his own work, a more free removal of the overlying skin, and a more frequent invasion of the region above the clavicle.

During the earlier years of the work which the writer was privileged to do in Brooklyn, namely, in the period extending from 1872 to 1888, his work in connection with mammary cancer was conducted on the lines until then generally taught and practised by surgeons, and which he now recognizes as having been incomplete. The record of his cases during this period is not complete enough for him to make use of them for statistical purposes. As a whole, however, they were a dreary record of recurrence, with quickly following death. In some instances, however, the advantage gained by his operations was so marked as to stimulate him to continued efforts, and to make him the more ready to adopt the more radical measures of the surgeons, whose work has just been referred to, when they were brought to his attention.

In one case, after the removal of a breast, followed later by a removal of perceptibly large axillary glands, the patient survived for six years, finally dying with symptoms indicating carcinoma of the liver.

In a second case, which presented itself to him with recurrence in the scar made by another surgeon, with well-marked involvement of axillary and supraclavicular glands, after a very free extirpation of all the diseased structures, in the course of which the internal jugular and subclavian veins and the axillary artery were ligated, the patient remained free from local recurrence, and enjoyed six years of good health; but then evidences of intrathoracic disease manifested themselves, terminating in death two years later.

When, by the opening of the Seney Methodist Episcopal Hospital in 1887, the writer was placed in a position to do more systematic work, and to preserve the records of the same,

he endeavored to take advantage of the opportunities presented, and the present study is based, with one exception, upon the cases which have come under his care in that institution during the period from 1888 to 1900 inclusive. The operations recorded were in most instances made by himself personally; in some cases they were conducted by his assistant, Dr. Warbasse.

In reviewing any series of cases of carcinoma of the breast with reference to the value of the measures instituted for their relief, it is of the highest importance to classify the cases according to the nature and extent of the disease presented by them.

All cases in which operations have already been done, and which afterwards present themselves with recurrence, more or less wide-spread, constitute a category entirely distinct from those cases in which the primary growth is met with as yet undisturbed by any surgical procedure.

In the mentioned class a long-standing existence of the disease is certain, together with evident wide-spread diffusion of the disease elements; a condition carrying with it almost a certainty that multiple points of disease exist not yet sufficiently developed to be grossly perceptible in addition to the nodules which are already palpable.

Efforts at a radical removal, therefore, are extremely likely to be incomplete, and to be followed speedily by the appearance of further points of disease.

Numerous cases of such secondary operation have engaged the efforts of the writer during the period under consideration, but in no case has ultimate success been attained thereby. With this reference to them, and this admission, they are excluded from further consideration in the present study.

The number of primary cases which seemed to promise benefit from operation which have presented themselves during the period in question was exactly fifty. All of these were subjected to operation. In seven of them, however, the operation itself revealed that the disease had already extended beyond the possibilities of entire removal, either by reason of the degree

to which the wall of the thorax was plainly involved, or by reason of the evident extension of the disease to the mediastinal glands.

In one of these, in which a portion of a rib was removed in the course of the operation, a pneumonia developed, which proved fatal on the third day. This was the only fatality attributable to the operation in the whole series. There remain, therefore, forty-three cases in which supposedly complete extirpation of a cancerous breast and adjacent disease was done.

It is hardly necessary to premise that in all cases the operative attack that was made was guided by a desire to go so wide of the disease that no vestige of affected tissue should be left behind.

Still, in dealing with carcinoma in any region of the body, the surgeon ever finds it difficult to hold a just balance between the natural reluctance to unnecessarily sacrifice apparently healthy tissue, to inflict unnecessary deformity and disability, and to increase to an unnecessary degree the hazards to life that attend his work, and the demands for radical, wide-extending extirpation arising from the unquestioned fact that a wide margin of apparently healthy tissue of indefinite extent must always be regarded as already invaded by microscopic disease elements, disseminated along the lymphatic paths that lead from the recognizable grossly affected foci. Too often the later history of his cases shows him that what was intended to be judicious conservatism was really imperfect and useless surgery, that had tended greatly to lessen the original possibilities of ultimate cure. Be this as it may, it is my desire now to record the actual results attained, and to draw from them such lessons as may seem warranted thereby.

In all the cases the general procedure was conducted in accordance with the teaching that the incisions through the overlying skin should go wide of apparent disease, and that the breast and axillary lymphatics, with the connective tissue and fat in which they were embedded, should be dissected out as an unbroken piece.

In looking over the details of the technique employed in

the carrying out of this general plan in the several cases, they naturally divide themselves into the following classes:

I. Ablation complete to apex of axilla, without removal of any pectoral muscle. Two cases.

II. Ablation complete to apex of axilla, with removal of pectoralis major muscle only. Eleven cases.

III. Ablation complete to apex of axilla, with removal of both pectoral muscles. Twelve cases.

IV. Ablation complete to apex of axilla, with removal of one or both pectoral muscles, and invasion of the supraclavicular region. Eighteen cases.

Of the two cases in Class I, the first remained well for six years after operation, when symptoms of intrathoracic disease developed, which proved fatal within the year.

In the second case, a local recurrence in the border of the pectoralis major muscle had developed eighteen months later, for which a second operation was done, when the whole muscle was removed. The patient remained well for five years, when a similar disease appeared in the other breast. This second breast was then removed, together with the contents of the axilla and the pectoralis major muscle on that side. No further recurrence of externally located cancer took place; but after three years, symptoms of cancer of the liver developed, resulting in death ten years after the first operation for mammary disease.

In Class II, the first case, at the end of ten years, still remains well.

The second patient died of cerebral apoplexy one year after operation, having had no sign of recurrence up to the time of her decease.

The third case, at the end of eight and one-half years, remains well.

The fourth case remained well for six years; during the seventh year there became evident carcinoma in the ribs, behind the site of the primary disease. This has very slowly advanced, and the patient is still living, though in feeble health, nine years after operation.

The fifth case, at the end of eight years, remains well.

The seventh case died two years after operation from intrathoracic metastasis.

The eighth case is the one mentioned in the preceding class, in which disease appeared in a second breast six and one-half years after the removal of the first breast for cancer, and in which case ultimate death resulted three and one-half years after the last operation from supposed carcinoma of the liver, no local recurrence having taken place.

In the ninth case, six months after operation the supra-clavicular glands were perceptibly enlarged; the space above the clavicle was then cleaned out, but it was then found that the disease had extended into the mediastinum. Death followed within two years.

In the tenth case, the patient was well one year after operation, since which time no report has been obtained.

The eleventh case died two years after operation with local and regional recurrence.

In these two classes,—Classes I and II,—of the thirteen patients contained in them, the later history of all but one being known, it appears that four have remained well to the present time, periods of from eight to ten years having elapsed since operation; that three more enjoyed a period of immunity lasting for six years, and then in each case developed renewed cancerous disease; that in three cases evidences of recurrence, in distant regions, showed themselves within three years after the operation, and that in but two cases did local recurrence take place.

It is pertinent and important to remark as to these cases that they comprise those in which, of all those which presented themselves for treatment, the disease apparently had made the least advance; in which no muscular involvement was detected, and in which the involvement of the glands of the axilla was not so extensive as to make difficult the cleaning out of that space. In three of the cases, however, the result showed that the primary operation was not complete, namely, the second case of Class I, in which the pectoralis major muscle was

not removed, and in which muscle the disease developed within a few months after the primary operation; in the ninth case of Class II, in which, within a few months after operation, the supraclavicular glands became noticeably enlarged, and were then attacked, but, as the operation revealed, not until after the disease had extended into the mediastinum; and in the eleventh case of the second class, in which within a year such extensive local recurrence had developed as to make any further operative effort impracticable.

That so large a proportion of absolute recoveries, or of freedom from disease for many years, should have been secured by the operative measures employed is full of encouragement as to the possibilities of successful attack in the earlier stages of breast carcinoma.

On the other hand, one cannot but harbor the thought that if a wider excursion to the operative attack had been made at the first in the last three cases mentioned, such as the removal of a greater area of skin, of the pectoralis minor muscle, and of more of the axillary connective tissue, and the extension of the incisions above the clavicle, the number of definite cures might have been yet larger.

This experience serves to confirm the value of the more recently advocated methods of dealing with carcinoma, the results simply being in accord with those which have been secured by many other surgeons working on the same lines.

With Class II comes into consideration cases in which the disease had attained a more advanced stage, so that, in order to facilitate the thorough removal of the axillary contents, the pectoralis minor muscle was removed as well as the pectoralis major.

The character of the results obtained by operation present a most marked change from those presented by the preceding classes. Twelve cases are included in this class. In one case the later history is unknown; of the remaining eleven, one lived five and a quarter years after the operation free from recurrence, and then died from an acute pneumonia at the age of seventy years. Two others are well at the present time, three

years and three years and four months * respectively after the operation. One is living five and a half years after operation, but with slowly advancing recurrence in axilla and above the clavicle. One other is still living three years after operation without external recurrence, but with evidence of carcinoma of liver. Six patients have died at periods varying from twelve months to five years and a half after operation. In all but one of these cases the development of supraclavicular disease was among the earliest evidences that the primary operation had been incomplete. In so many instances did this demonstration of the extension of the disease to the lymph glands above the clavicle occur, notwithstanding no such glandular involvement was perceptible to examination, that it has seemed to the writer to be reasonable to regard the supraclavicular lymphatic tissues as diseased in all cases in which the glands at the apex of the axilla were markedly affected, and that in all such cases the rational procedure for the surgeon to pursue was to open up the supraclavicular spaces and clean them out as well as to deal in the same manner with the axilla. Accordingly, in a very considerable number of cases, notwithstanding the absence of any evident supraclavicular disease, that region was opened and explored. The number of such cases was eight, and in nearly all of them were uncovered and removed small nodules distinctly cancerous, though too minute to be detected by palpation when covered by the intact fascia and skin. The total number of cases in which the supraclavicular spaces were opened is eighteen, in ten of whom palpable supraclavicular nodes existed. Of the entire number of this class, Class IV, but two have remained well. These two cases have now passed respectively six and four and a half years since operation in good health, entirely free from any suggestion of cancerous disease. One other still lives, more than two and a half years since operation,

* Shortly after the preparation of this report, this patient was found to have a small pea-sized movable nodule in the connective tissue under the scar in the fourth intercostal space in the mammillary line. This was at once excised with much circumjacent tissue under cocaine, October 29, 1902.

in good general health, but with a beginning enlargement of the costochondral articulations on the affected side, which are indicative of recurrent disease in the ribs. The others are all dead, in the majority of cases from intrathoracic metastasis.

Of the two cases that may be pronounced as cured, one was a woman, sixty-eight years of age, with a diffuse infiltration of the right breast, and with perceptibly large axillary and supraclavicular nodes. For three years she had been aware of the presence of this disease. In the second case likewise for more than three years the patient had been aware of the presence of a tumor in her breast; the whole gland had become manifestly involved in the disease, and had become converted into a large ulcerating tumor. In this case the axillary nodes were enlarged, but the supraclavicular nodes were not perceptible. The operative attempt to remove the disease was conducted in two stages,—first was done an excision of the breast and the axillary contents and the pectoral muscles; two weeks later, primary union of the first wounds having been secured, the clavicle was exposed by incision and double division of the bone made so as to leave its middle third loose, and attached merely by the subclavius muscle. This bone-muscle flap was then turned down so as to give complete access to the base of the neck, which was then carefully cleaned out. Some carcinomatous nodules were detected in the tissue removed from the neck; the osteoplastic flap was then replaced in its proper relations to the rest of the bone; rapid operative recovery from this second operation was secured. Four and a half years have now elapsed, and up to the present time she has remained perfectly well.

The experience of these years has emphasized most strongly to my consciousness the fact that nothing is more illusive than the apparent local extent of a carcinomatous process. In many instances the epithelial invasion which constitutes the essential element of the process has been for a long time slowly, insidiously, painlessly, and imperceptibly progressing, without producing manifest tumor, and without attracting the attention of the person affected, until by accident her atten-

tion is at last drawn to the alteration in the texture of the breast which has occurred; hence, little of importance can attach to the subjective symptoms which are elicitable in the history of these cases, and nothing is more unreliable than the statements of patients as to the length of time the disease has been present.

On the other hand, the size of the local growth and the rapidity with which its bulk has increased since its presence was detected, and the tendency to breaking down which it may exhibit when it comes to the surgeon's notice, is no positive index to the number and distance of the secondary outlying deposits which may have occurred along the outgoing lymphatic paths.

It is true that there are certain gross evidences of advanced carcinoma which, when they are present, are unmistakable as to their character and meaning, such as fixation of the gland to the subjacent muscle, palpable enlarged glands in the axilla and above the clavicle, and nodules in the circumjacent skin. Cases presenting such conditions fall without dispute into the category of cases of advanced carcinoma of the breast. Different from these are some growths which from the first exhibit a tendency to rapid local increase in size and early necrosis, without corresponding tendency to the development of metastases. They early attract attention and speedily come to extirpation, which, when done in the complete manner required by the pathological knowledge of the present day, is likely to result in permanent cure. While these latter acutely developing cases may also very properly be classed as cases of advanced carcinoma, the prognosis attending efforts at their removal is much more favorable than that which attaches to the cases of the more slowly diffused epithelial invasion. In the latter class of cases the skin over and adjacent to the breast may be apparently healthy and still harbor multiple points of metastatic deposit, as yet microscopic in size. Upon the whole, one is almost driven to the conclusion that clinically the surgeon never sees carcinoma of the breast in any other than an advanced state. Some cases when brought to his notice may certainly be farther advanced than others, but, without dispute,

every case when first brought to his attention has behind it a long period of development, and has connected with it every probability of many and distant metastases. Hence those surgeons alone are rational and correct who insist that in every case that comes to operation a far-reaching and wide-extending removal of overlying and adjacent tissue shall be made together with the removal of the affected breast itself. Every tissue related to the affected breast by propinquity or by connecting absorbent ducts rests under suspicion; the less the apparent advancement of the primary disease, the greater, of course, the probability of the successful result of the surgeon's efforts, and hence the greater the importance of the most radical and far-reaching extension of his removal of possibly affected tissue in presumably early cases. A wide area denuded of skin may readily be covered again by plastic flaps or by grafts; removal of both pectoral muscles entails surprisingly little ultimate disability, and most extensive wounds in the axilla and above the clavicle heal with certain promptness when made under the precautions required in the surgery of the present day. When the statistics of Billroth[7] at Vienna were published in 1878, it appeared that of seventy-three women from whom he had removed the breast and axillary glands for cancer, twenty-seven had died as the result of the operation, more than one in every three operated upon! At the present day many lists of more than 100 similar consecutive cases have been published without a death. Among the fifty cases now reported by the writer there was but one operative death. Such a remarkable absence of mortality attending the extensive and prolonged dissections now employed in operations for cancer of the breast is due to three causes, all characteristic of the perfected methods of wound treatment of the present day, viz., the prevention of shock, careful hæmostasis, and scrupulous antisepsis. Increasing appreciation of the pathological indications for radical operative measures and increasing perfection of operative technique have progressed with equal steps. Upon the combination of the two depends the great change for the better which has been effected in the operative possibilities in cases of carcinoma of the breast.

It ought to be unnecessary at the present day to call the attention of educated physicians to the high importance of immediate surgical interference in every case of even suspected carcinoma of the breast, unless there be circumstances attending the case which contraindicate any operation; and yet it is still the case that frequently patients are not presented to the surgeon until after they have been under the observation of physicians for many months, delay having been advised by the latter while they watched the progress of the growth. It is not rare that a patient who has discovered something wrong in her breast is told by her physician not to worry, to come back again in six months, or "in the fall," or to try some kind of treatment, and is thus led to postpone surgical relief until a period when the probability of its successful application is greatly lessened, if not absolutely destroyed. Nor is it the young and inexperienced or obscure practitioner that is always the greatest sinner in this respect. Of the fifty cases under consideration in the present report, thirty-seven had in this way postponed application for surgical relief after they had become aware of the existence of the disease for periods varying from six months to three years or more, the record being, for six months in twelve instances, one year in ten instances, two years in eight instances, and three years or more in seven instances! It cannot be too strongly emphasized that practically *every case of carcinoma of the breast, when it has reached that degree of development by which a palpable tumor is formed, is already in an advanced stage,* such an advanced stage that, as a rule, metastastic deposits have already begun to be formed, beginning in the near-by lymphatic paths, and that only by an immediate far-reaching removal of both the discernible disease and the adjacent tissue that may enclose metastatic points can even a moderate probability of permanent cure be assured. The differential diagnosis of neoplasms of the breast rarely presents any uncertainties to one who is familiar with them; the characteristics of the retention cysts, the adenomata and the inflammatory indurations, which constitute nearly all the non-malignant tumors of the breast, are usually well marked and readily

made out. If in any case any doubt exists, it is far wiser to give the benefit of the doubt to malignancy, and to at once proceed to its extirpation. Roger Williams analyzed 2422 consecutive cases of primary mammary neoplasms, and found of this number 1974 that were malignant, that is over 81 per cent.!

The operations required for the accomplishment of the wide-reaching removal of tissue called for by the known pathological conditions present in mammary cancer are laborious and time consuming, and for their best and most successful performance require a high degree of technical skill and a full equipment of assistants and of material. The multiplication of hospitals and the increasing number of able men with operative training and experience connected with them, however, place in most communities all the needed requisites for the more frequent performance of operations for cancer that comply with the demands of pathology.

Present experience warrants the statement that surgery can promise a very large proportion of absolute cures to cases of cancer of the breast, if its resources are employed as soon as the presence of the disease is determined, even though it be acknowledged that the disease is there already in an advanced stage.

It is not to be wondered at that in the past, with its records of high operative mortality and low ultimate immunity from recurrence, both patients and physicians have preferred to postpone efforts at extirpation until the burden of the local disease has become intolerable.

The influence of this attitude of a past generation still lingers, and to it is due much of the hesitancy to at once seek surgical relief which we have been deploring.

As the knowledge becomes more general as to what has been and can be done by surgery for the cure of cancer of the breast, less hesitancy will be displayed by its victims in at once availing themselves of the help which is offered, and the proportion of permanent cures effected will be increased.

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